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DIACHRONIC SOUND-CHARTS:
A TECHNIQUE TO REPRESENT SOUND-CHANGE

Henry M. Hoenigswald, University of Pennsylvania

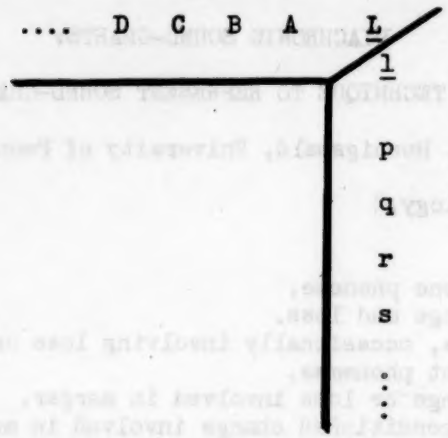
[P250. Historical phonology.]

0. Introduction.
1. Transformations of one phoneme.
1.1. Unconditioned change and loss.
1.2. Conditioned change, occasionally involving loss or increment.
2. Merger from different phonemes.
2.1. Unconditioned change or loss involved in merger.
2.2. Various types of conditioned change involved in merger.
3. Review; typical patterns (paths on charts) created by interacting sound changes.
4. Combinations of more than one chart to show several successive stages.

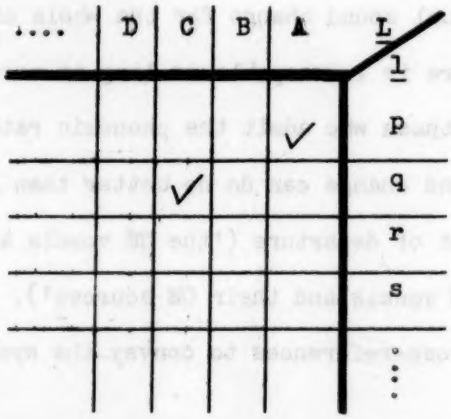
0.1 Our handbooks are criticized for their failure to show the relevance of an individual sound change for the whole of the changing sound system. Yet such failure is inescapable as long as mere verbal statement is adhered to, since even those who admit the phonemic rather than simply phonetic nature of so-called sound change can do no better than list the developments in question by either point of departure ('the OE vowels and their ME results') or destination ('the ME vowels and their OE sources'). Both arrangements necessitate unwieldy cross-references to convey the systematic impact of the changes.

The device here described does not suffer from this particular difficulty. Its advantages and limitations are summarized below (3).[1]

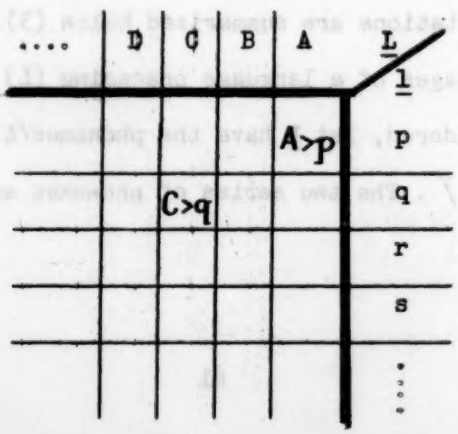
0.2 Of the two stages of a language preceding (L) and following (l) the change or changes considered, let L have the phonemes/A B C D .../;and l, the phonemes /p q r s . . ./ . The two series of phonemes are arranged thus:



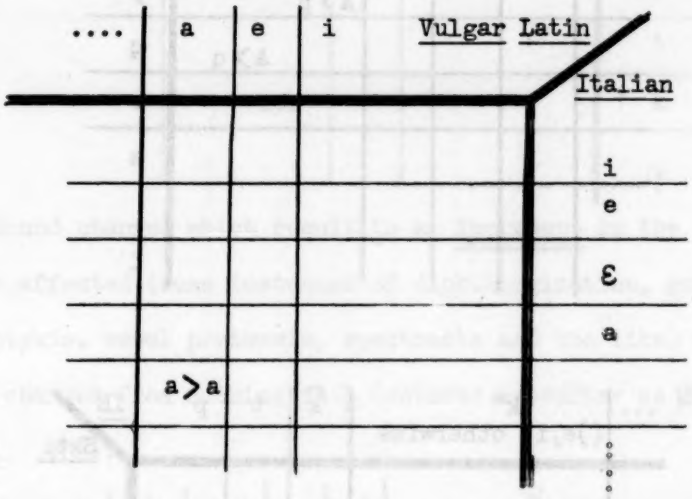
1.11 Such correlation between the phonemes of l and those of L as is considered the result of regular sound change is entered at the proper intersection, either in the form of a check mark:



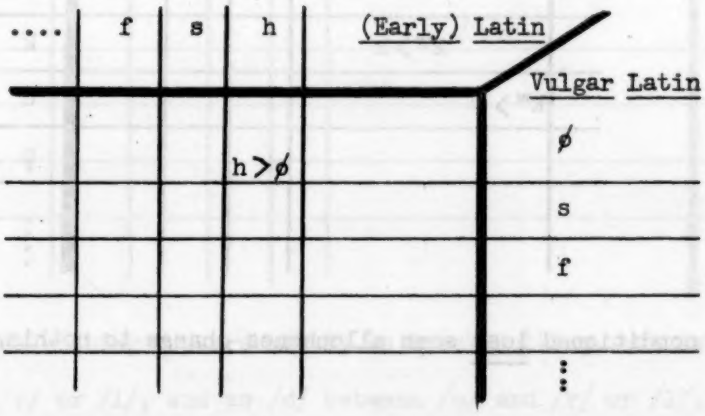
or in the form of explicit statement (as hereafter):



This, by itself, would represent unconditioned change (or, if we picture the phonetic difference between L and l as negligible, lack of change). For instance: [2]

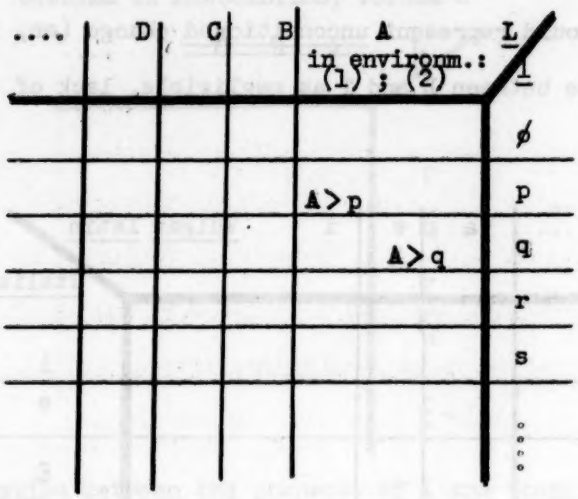


1.12 Unconditioned loss is entered as unconditioned change to 'nothing', with /ø/ (for 'nothing') added to the list of l phonemes. Thus:

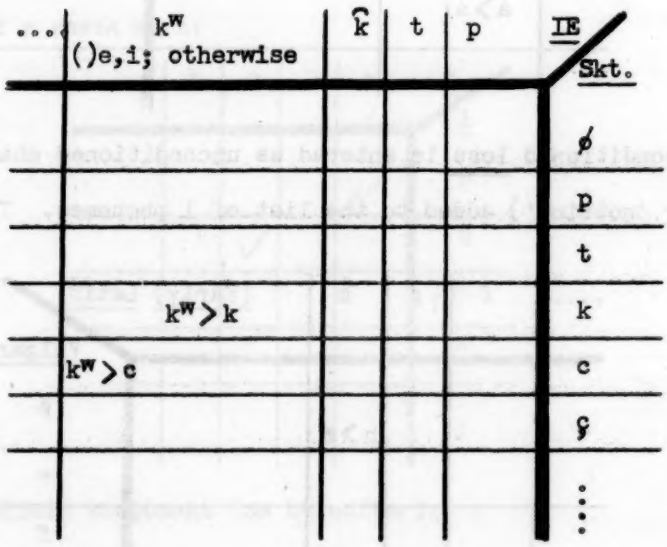


or, (Early) Latin /h/ is lost in Vulgar Latin wherever it occurs.

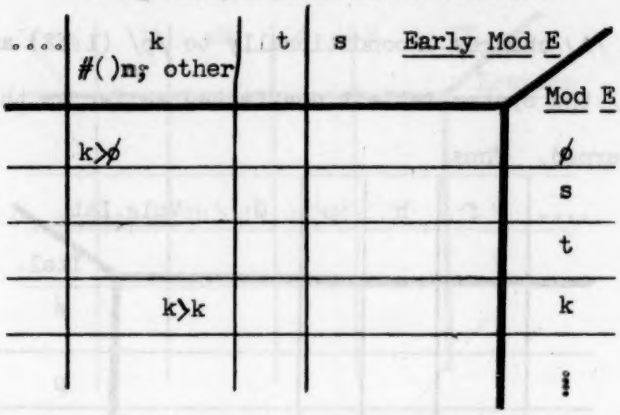
1.21 Most sound changes are conditioned;[3] the positional allophones of a given phoneme in L appear as parts of two or more different phonemes in l. Such split may be represented as follows:[4]



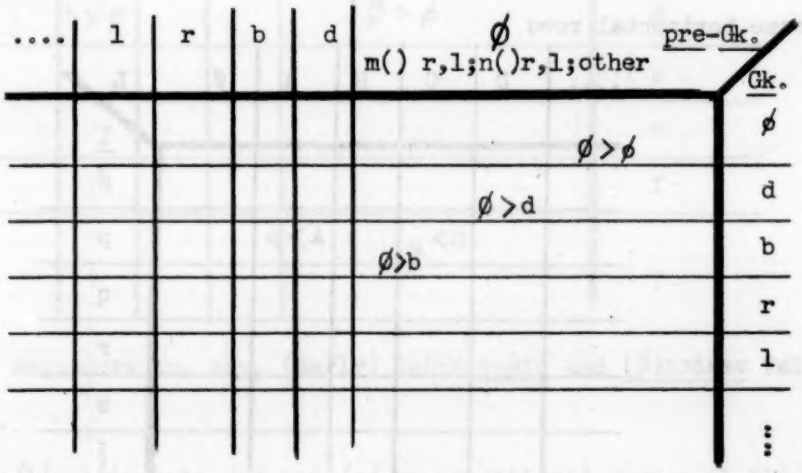
For example:



1.22 In conditioned <u>loss</u> some allophones change to nothing:



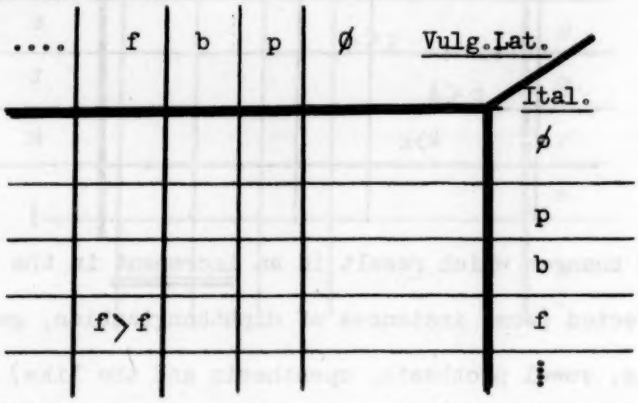
1.23 Sound changes which result in an increment in the number of phonemes in the forms affected (some instances of diphthongization, gemination, affrication, anaptyxis, vowel prothesis, epenthesis and the like) may be viewed as conditioned changes from nothing in L (entered hereafter as ø) to a real phoneme in l. Thus:



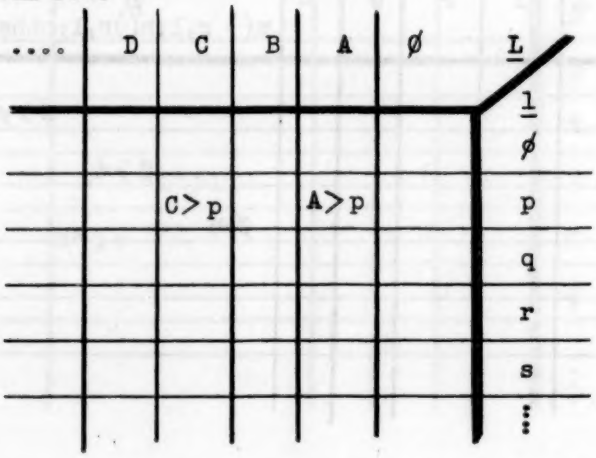
that is, pre-Greek nothing appears mostly as Greek nothing, but as /b/ between /m/ and /r/ or /l/, and as /d/ between /n/ and /r/ or /l/.

2. So far we have dealt with the possible treatment of one given L phoneme (including ø): unconditioned change 1.11, unconditioned loss 1.12; conditioned change 1.21, conditioned change involving loss 1.22, and increment 1.23. We are now ready to consider merger in l from different phonemic sources in L.

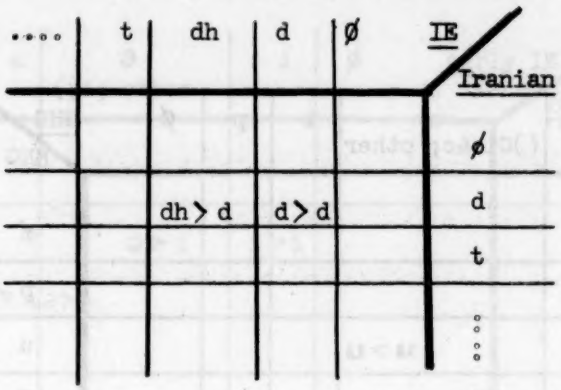
2.111 Where /A/ changes unconditionally to /p/ (1.12) and all /p/s in turn come from /A/ the system is left unaffected as far as these particular features are concerned. Thus:



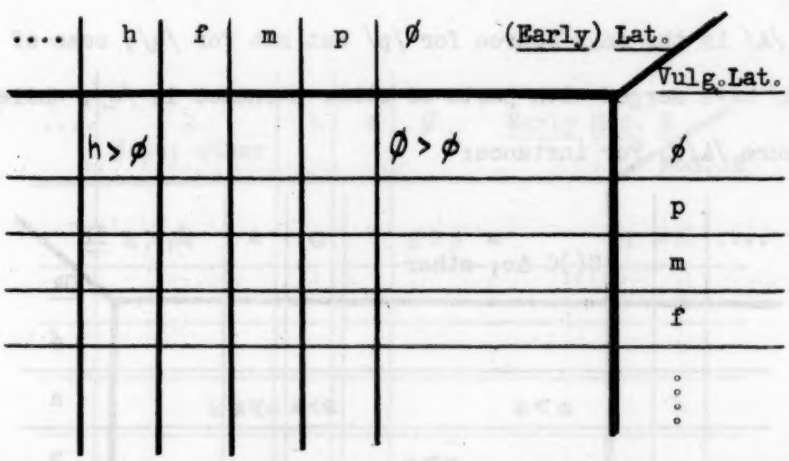
2.112 Where /A/ changes unconditionally to /p/ without being the only source of /p/ in L we find merger, represented by two or more entries in one and the same horizontal row:



For instance:



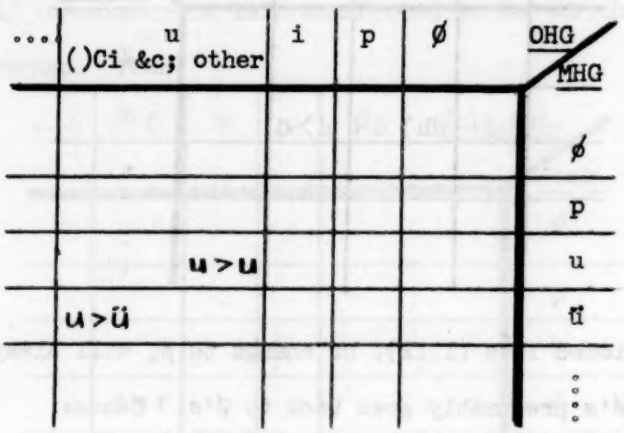
2.13 Unconditioned loss (1.12), or change to ø, will always involve merger as the majority of ø's presumably goes back to ø's. Hence:



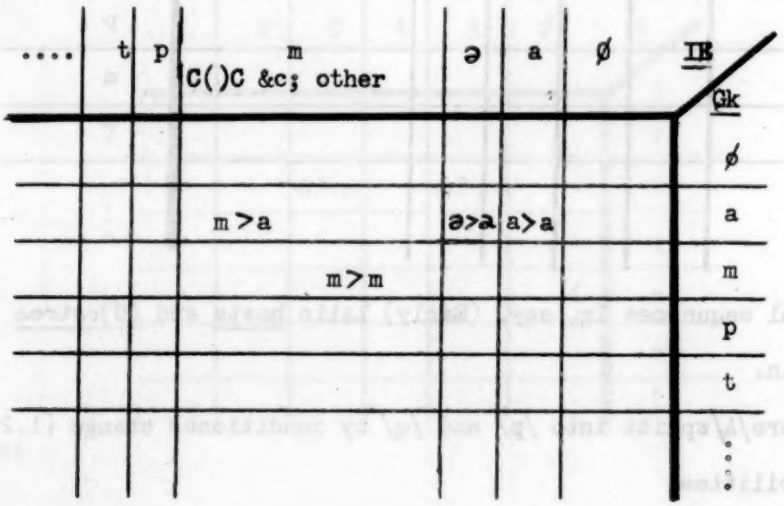
or, the initial sequences in, say, (Early) Latin hoste and (ø)ostrea fall together in Vulgar Latin.

2.21 Where /A/ splits into /p/ and /q/ by conditioned change (1.21) there are several possibilities.

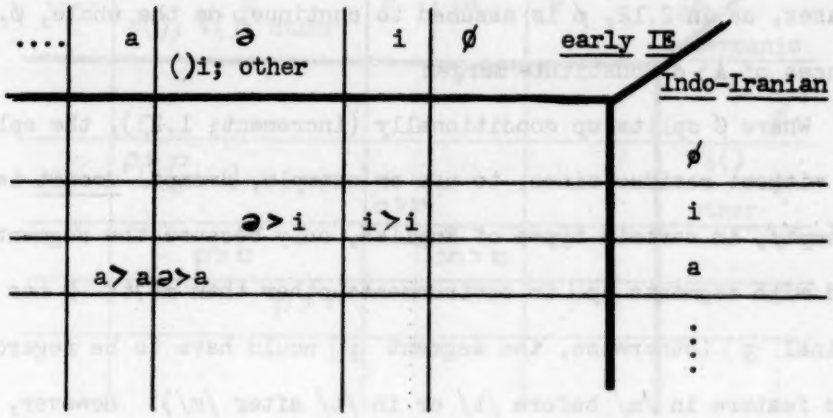
2.211 /A/ is the only source for both /p/ and /q/. For example:[5]



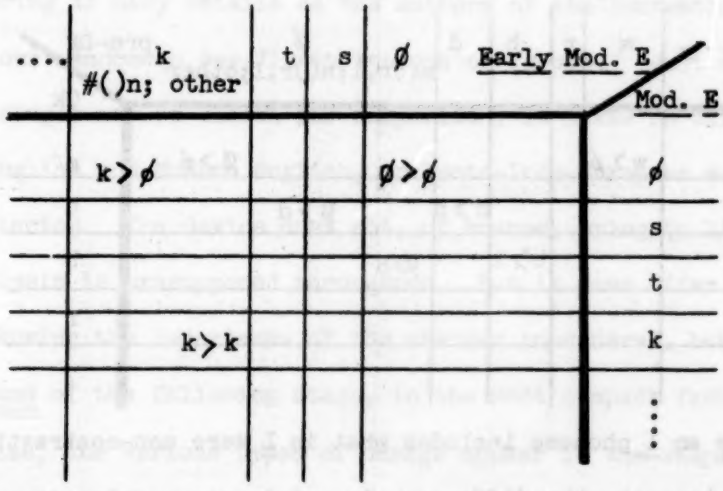
2.212 /A/ is the only source for /p/ but not for /q/; some of the allophones of /A/ have merged with parts of other phonemes in /q/, while /p/ is a residue of pure /A/. For instance:[6]



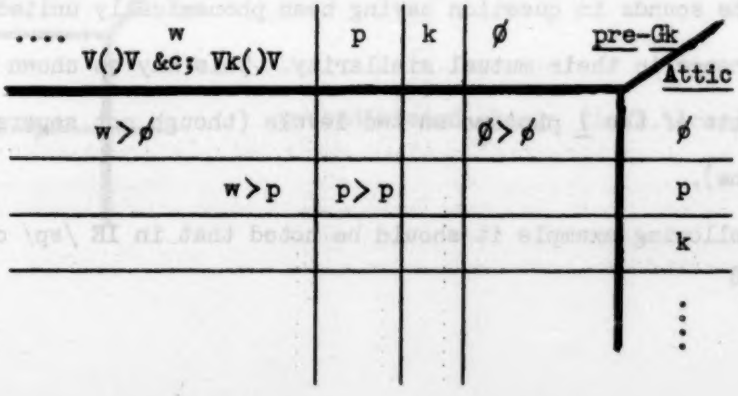
2.213 /A/ is neither the only source for /p/, nor the only source for /q/. No phonemically independent residue; complete merger, though in different directions. Thus:



2.22 Where /A/ is conditionally lost (i.e., splits up into/ø/and /p/; 1.22), /p/ may of course either be a residue phoneme with /A/ as its only source, as in



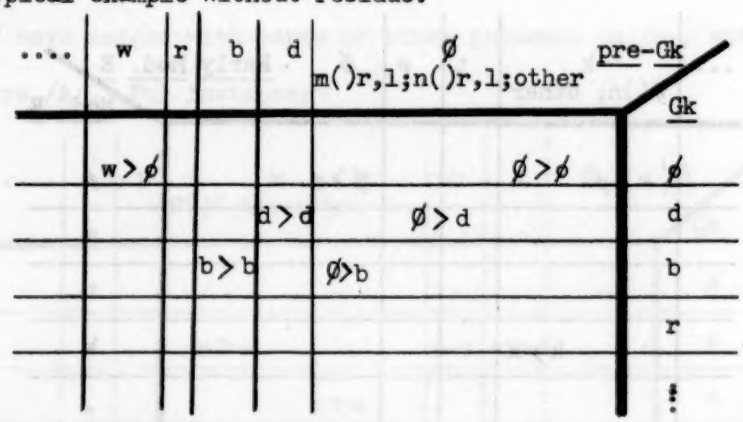
or else, /A/ may have merged in /p/ with other sources (no residue), as in[7]



In both cases, as in 2.12, ∅ is assumed to continue, on the whole, ∅, so that all instances of A>∅ constitute merger.

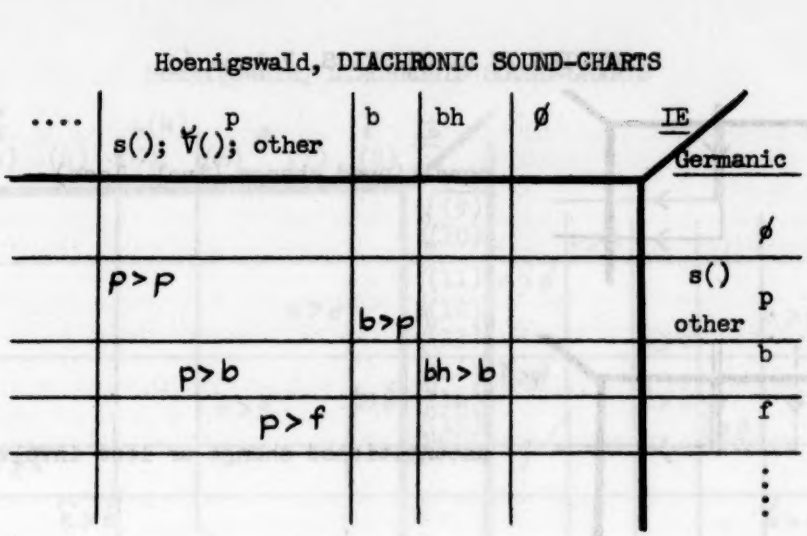
2.23 Where ∅ splits up conditionally (increment; 1.23), the split is apt to be one without residue since, to use an example, [drempt] dreamt is phonemically /drémpt/, in certain types of English, only because the segment [p] is identified with segments [p] in environments other than m()t: ∅ has merged with original [p] (otherwise, the segment [p] would have to be regarded as an allophonic feature in /m/ before /t/ or in /t/ after /m/). However, so-called considerations of pattern may conceivably lead to the setting up of a glide segment or the like as a phoneme even if there is no merger.

For a typical example without residue:



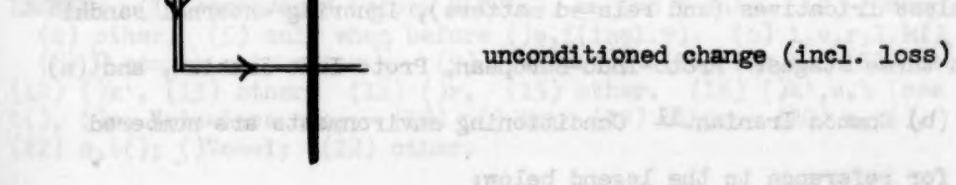
2.3 Where an L phoneme includes what in L were non-contrasting portions of two (or more) phonemes, the difference in origin may survive as a difference in allophones, the sounds in question having been phonemically united merely by reason of a change in their mutual similarity. This may be shown by entering the constituents of the L phoneme on two levels (though not separated by a horizontal line).

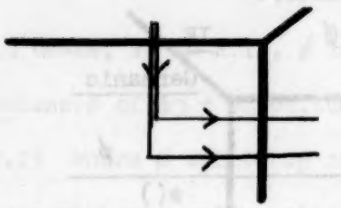
In the following example it should be noted that in IE /sp/ occurred, while /sb/ did not:[8]



3. In this manner any sector of a changing sound system (and, in theory, the entire system) may be presented, including or, for the sake of the particular argument, ignoring as many details as the authors of the conventional verbal statements in our handbooks see fit to include or ignore.[9] Just so, any two chronological stages may be chosen for comparison; it makes no difference whether Early Modern English and Modern English, or Proto-Indo-European and Modern English are selected. The device does not, of course, bring to light new data, since such analysis is presupposed throughout. But it does offer material advantage in showing the importance of the changes considered, both in terms of the preceding and of the following stage, in the most compact fashion possible.

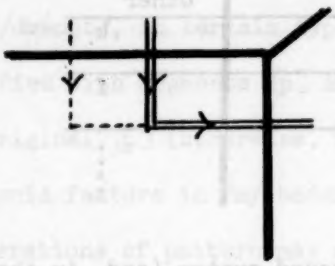
To summarize, the various types of change appear in the shape of the following paths:[10]



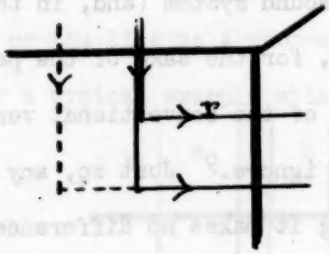


conditioned change (incl. loss)

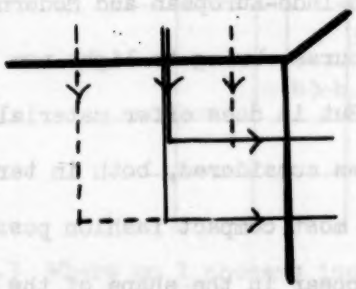
(2)



unconditioned change or loss involving merger

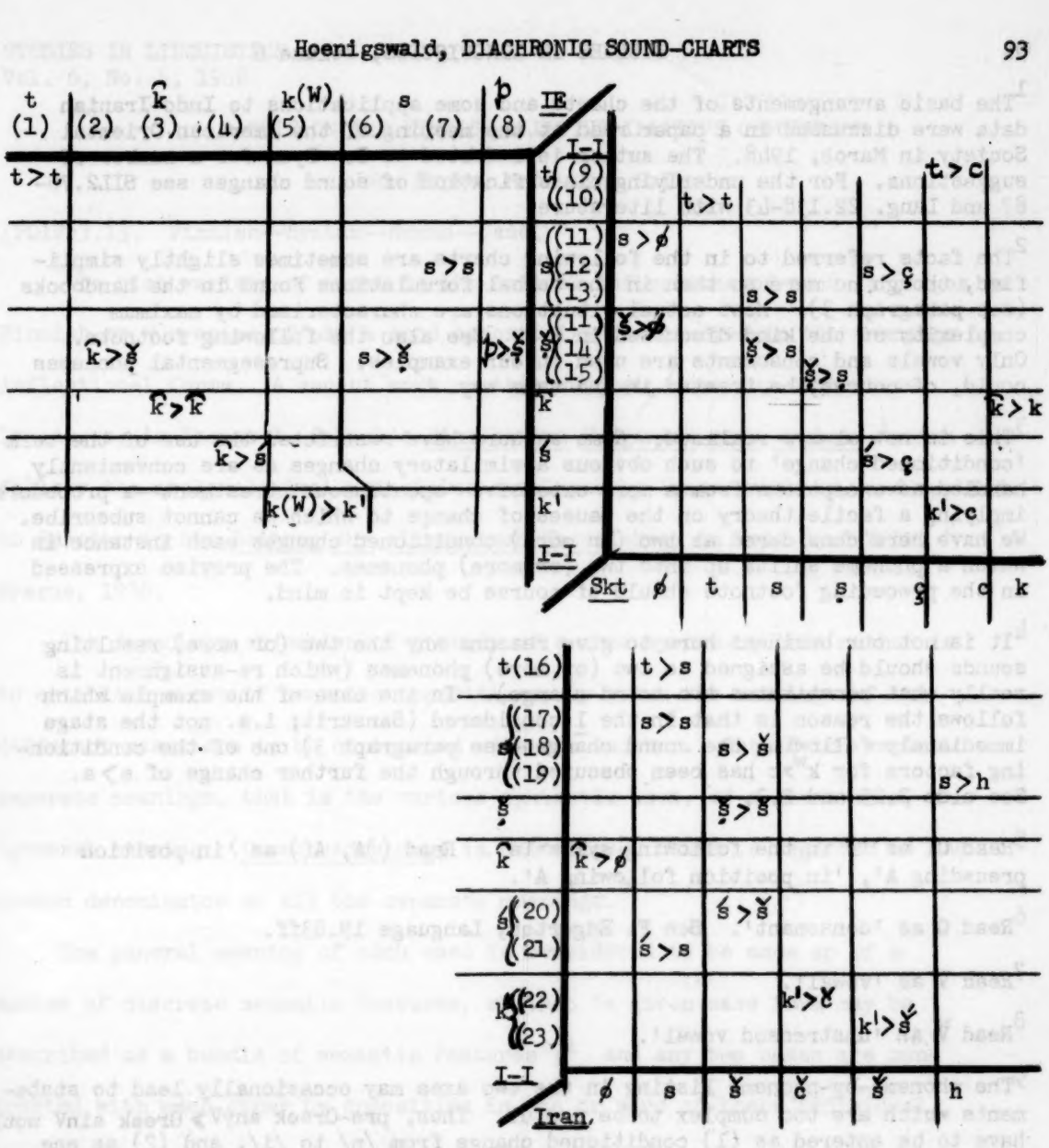


conditioned change or loss, involving merger and r(esidue)



conditioned change or loss, involving merger without residue

4. Two charts may be combined to show three successive stages, or two systems of changes. The following examples summarize the history of the Indo-Iranian voiceless fricatives (and related matters), ignoring external sandhi phenomena, in three stages: Proto-Indo-European, Proto-Indo-Iranian, and (a) Sanskrit and (b) Common Iranian.[11] Conditioning environments are numbered continuously for reference to the legend below:



LEGEND: (1) considered before $k^{(W)}$(5), s, and t only. (2) ()Stop, (3) ()s, (4) other. (5) only when before ()e,i(incl.y). (6) i,u,r,l,k(), (7) other. (8) p̂ occurs only after k̂. (9) ()$k^{(W)}$(5), (10) ()s,t. (11) Stop()Stop, (12) ()k', (13) other. (14) ()r, (15) other. (16) ()k',s,t (see (1)). (17) t(), ()n, Voiceless stop; (18) p() &c; (19) other. (20) n,p(), (21) other. (22) s,t(); ()Vowel; (22) other.

[April 23, 1948]

[1]The basic arrangements of the charts and some applications to Indo-Iranian data were discussed in a paper read at the meeting of the American Oriental Society in March, 1948. The author is indebted to I. Dyen for a number of suggestions. For the underlying classification of sound changes see SIL2.78-87 and Lang. 22.138-43 with literature.

[2]The facts referred to in the following charts are sometimes slightly simplified, though no more so than in the verbal formulations found in the handbooks (see paragraph 3). Most actual situations are characterized by maximum complexity of the kind discussed in 2.2. See also the following footnote. Only vowels and consonants are used in our examples. Suprasegmental phonemes could, of course, be treated in the same way.

[3]This is not always realized. Some authors have restricted the use of the term 'conditioned change' to such obvious assimilatory changes as are conveniently handled as exceptions from a more extensive 'spontaneous' treatment--a procedure implying a facile theory on the causes of change to which we cannot subscribe. We have here considered as two (or more) conditioned changes each instance in which a phoneme splits up into two (or more) phonemes. The proviso expressed in the preceding footnote should of course be kept in mind.

[4]It is not our business here to give reasons why the two (or more) resulting sounds should be assigned to two (or more) phonemes (which re-assignment is really what constitutes the sound change). In the case of the example which follows the reason is that in the $\underline{1}$ considered (Sanskrit; i.e. not the stage immediately following the sound change--see paragraph 3) one of the conditioning factors for k^w>c has been obscured through the further change of e>a. See also 2.23 and 2.3.

[5]Read Ci as 'i in the following syllable'. Read ()A, A() as 'in position preceding A', 'in position following A'.

[6]Read C as 'consonant'. See F. Edgerton, Language 19.83ff.

[7]Read V as 'vowel'.

[8]Read $\breve{V}$ as 'unstressed vowel'.

[9]The phoneme-by-phoneme listing in the two axes may occasionally lead to statements which are too complex to be useful. Thus, pre-Greek anyV> Greek ainV would have to be entered as (1) conditioned change from /n/ to /i/, and (2) as one from /y/ to /n/. Similar awkward notations would result in other cases of metathesis and related processes. They may be avoided at the cost of absolute consistency by entering sequences (ny; in) (rather than individual phonemes) in the axes.

[10]That is, a sound change as read from the $\underline{L}$ axis through the intersection to the $\underline{1}$ axis. Two parallel lines at a close distance stand for 'two positional variants of one phoneme'.

[11]See especially Bartholomae in Grundriss der iranischen Philologie 1.1ff. The line is drawn, arbitrarily, to exclude the sources of Iranian /f/, /θ/, etc. For details see the legend.

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A NOTE ON THE FINNISH ALLATIVE-ILLATIVE OPPOSITION

John Kepke, Brooklyn, N.Y.

[PD1243.13. Finnish--Syntax--Nouns--Case.]

The rich variety of cases in the nominal inflections of such languages as Finnish or Hungarian offers a good opportunity for studies in the meanings of inflectional forms. A recent work on this subject, covering both these languages, is Thomas A. Sebeok's Finnish and Hungarian case systems,[1] which follows the methodological principles developed by Roman Jakobson, and applied to Russian in his Beitrag zur allgemeinen Kasuslehre, in Vol. 6 of TCLP,[2] Prague, 1936.

The immediate objective of a study of a case system by this method is to establish a set of semantic oppositions, by which the meanings of the different cases are to be contrasted with one another. Out of the various separate meanings, that is the various syntactic uses, of a given case, a 'general meaning' (Gesamtbedeutung) is determined. This is regarded as the common denominator of all the separate meanings.[3]

The general meaning of each case is considered to be made up of a number of discrete semantic features, so that 'a given case form may be described as a bundle of semantic features';[4] and any two cases are contrasted with each other by opposition in one or more of these individual semantic features.

I am concerned here chiefly with two of the Finnish cases, and incidentally with two others, four in all. Two of the four, the elative and the ablative, are frequently used to indicate motion from. In fact, I think it is safe to say that they most commonly function in this and similar, or related, meanings, that is, broadly speaking, in a general ablative way. I don't think I would

care to go any further than that in generalizing about their meanings, except, of course, as to the distinction between them, which is not relevant to this paper. The corresponding cases for motion to or toward, and for the indirect object, or, again broadly speaking, for lative and dative functions, are the illative and the allative, respectively.

Sebeok, of course, in following Jakobson, includes all the uses of each case in its general meaning (Gesamtbedeutung); and he expresses the contrast between motion from and motion toward as a feature of 'limitation', which he ascribes to motion from, etc., and which is therefore lacking in the cases that mean motion toward, etc. Concerning the elative-illative opposition, he says:

'...the elative expresses motion from, the beginning of a period, cessation from an occupation or condition, separation, and so forth, or in other words, its general meaning includes elimination of some sort. Since elimination is but an instance of limitation, the elative may be said to participate in the opposition of limitation as (+), in relation to the illative which, on the other hand, includes the absence (-) of limitation-signification.'[5]

Later, in contrasting the ablative and the allative, he says:

'The ablative, similarly to the elative, expresses motion from, the beginning of a period, cessation from an occupation or condition, separation, and so forth: lapsi tulee alas vuorelta "the child came[6] down from the mountain"; me tulemmelounalta "we'll come after lunch", etc. In other words, the same feature of limitation (+) is apparent. The allative, on the other hand, indicates the absence (-) of limitation-signification: lintu lensi maalle "the bird flew to the land", helvetti näyttää synkälle "hell looks dismal".'[7]

In preparing his treatise, Sebeok used material obtained from native speakers;[8] and in this last example he got a construction with the allative, and

he contrasts it with the ablative to show that the one indicates the absence of limitation-signification, while in the other he finds that the feature of limitation is apparent. Evidently his informants did not give him any sentences using the ablative in the same way as the allative is here used; but it is a fact that the ablative does occur in such expressions; for example, with the same verb as used in the example cited, näyttää, one can say: mahdottomalta näyttää 'it appears impossible', tämä näytti neuvottomalta ' the latter looked perplexed'.[9]

From this it may be concluded that such methodological principles will work at least as well with incorrect or inadequate data as with the actual facts of a language.

[August 7, 1948]

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[1]Stockholm 1946.

[2]Pp. 240-88. Cf. Sebeok p. 9, and footnote 2.

[3]Sebeok 9.

[4]Ibid. 10.

[5]Ibid. 14.

[6]The form tulee is present tense. The translation as 'came' is presumably determined by context.

[7]Sebeok 14-15

[8]Ibid. 5

[9]These examples are taken from written texts, modern fiction. See also C.N.E. Eliot, A Finnish Grammar, Oxford 1890: 154-6; E.N.Setala, Suomen kielen lauseoppi, 18th ed., Helsinki 1942: 71, §62.VIII. and 72, §63.II. (also in Swedish, Finska språkets satslära, 7th ed., Helisinki 1934: 76-7); Naimi Päiwiö, Finnisch, Praktisches lehr- und Lesebuch mit Touristensprachführer, Helsinki 1923: 166, §§80.6. and 81.2.; also illustrative examples under the verbs käyttää and tuntua, also haista, kuulostaa, kuulua, maistua, tuoksahtaa, tuoksua, vaikuttaa, and vivahtaa, in one or more of the following dictionaries: Severi Alanne, Finnish-English Dictionary, Superior, Wisconsin, 1919; Jean-Louis Perret & Tauno Nurmela, Dictionnaire finnois-français, Helsinki 1944; Knut Cannelin, Finskt-svenskt lexikon, 8th ed., Porvoo 1947; Karl Erwast, Finnisch-Deutsches Wörterbuch, Hämeenlinna 1888; and Aino Wuolle, Finnish-English Dictionary, 2nd ed., Helsinki 1947.

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REVISIONS TO A BIBLIOGRAPHICAL CLASSIFICATION SYSTEM: 1

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[PJ95.1. American Indian languages--Classification.]

When my classification system for linguistics and languages was published (SIL3.54-108 [1945], 4.1-50 [1946]), it was stated that it was presented substantially as I had been using it because of the large amount of correction involved in making changes in material already classified by it (3.56). However, it was contemplated that from time to time corrections and revisions would be necessary. Errors have been corrected, and some minor revisions and additions made in a supplementary list of corrections that was sent to individual purchasers of the reprints, and this list was embodied in the corrections included in Edith Crowell's Index to SIL1-5 (SIL6.1-19 [1948]). But the time has come to begin making more substantial revisions, and the present note sets forth the first of these. Others will be published from time to time; it is especially hoped that workers in the various special subfields will contribute their findings, either in the direct form of revised classifications, or as material on which to base revisions.

The classification of the Uto-Aztecan and Tanoan languages (3.102) was itself already a revision of a previous and less elaborate scheme, and was crowded into too few numbers in order to avoid making certain other changes which would have involved, among other things, a sacrifice of hierarchical relative order. It has proved unwieldy in practise, however, and I am now making the following changes in the classification; these disturb the hierarchical order of subordination in some cases, but provide more numbers and leave more unused numbers.

The revised classification covers PJ4300-4500. It is as follows:

J4300 Azteco-Tanoan [classification from B.L. Whorf].
4310 Uto-Aztecan: 4311 South Californian Uto-Aztecan: 4312 Cahuilla, 4313 Luiseño, 4314 San Juan Uto-Aztecan, 4315 Agua Caliente U-A, 4316 Gabrielino (Gabrieleño), 4317 Fernandeño. 4319 Tubatulabal. 4320 Hopian: 4321 Hopi, 4322 Mono, 4323 Paviotso, 4324 Bannock. 4325 Ute-tan: 4326 Northern Ute, 4327 Southern Paiute, 4328 Southern Ute, 4329 Chemehuevi, 4330 Kawaiisu. 4335 Shoshoni-Comanche: 4336 Shoshoni, 4337 Comanche. 4340 Taracahitian: 4341 Tarahumara, 4342 Cahita--4343 Yaki (Yaqui), 4344 Mayo; 4345 Varahio, 4346 Opata, 4347 Heve. 4350 Aztecoidan: 4351 Cora-Huichol--4352 Cora, 4353 Huichol; 4355 Nahuatlan: 4356 Nahuatl group --including 4357 Aztec [proper] (including 4358 Desagradero*, 4359 Tepanec*, 4360 Sigua*, 4361 Meztitlanec*); 4365 Nahuat--4366 Toltec Chichimec*; 4367 Pipil, 4368 Alaguilac*, 4369 Nahuatlato*, 4370 Bagaces*, 4371 Nicarao*, 4372 Chuchures*; 4375 Pochutla. 4380 Piman: 4381 Piman proper--4382 Pima Alto (4383 Papago, 4384 Piato*, 4385 Himeri*), 4386 Pima Bajo (4387 Nebome, 4388 Ure*, 4389 Cocomacague*); 4390 Tepehuan--4391 Northern Tepehuan, 4392 Southern Tepehuan, including 4393 Tepecano, 4394 Teul*(?) and 4395 Colotlan*(?), 4396 Vigitegan* (?).
4400 Tanoan: 4410 Tiwa: 4411 Northern Tiwa including 4412 Taos and 4413 Picuris (San Lorenzo), 4415 Southern Tiwa including 4416 Sandia, 4417 Isleta, 4418 Isleta del Sur, and 4421 Piro* and 4422 Tano* (?). 4430 Tewa: 4431 San Juan, 4432 Santa Clara, 4433 San Ildefonso, 4434 Pojoaque*, 4435 Nambé, 4436 Tesuque, 4437 Hano. 4440 Towa: 4441 Jemez, 4442 Pecos*.
4500 Kiowa.
4550 Zuni.
J4600 ....

The changes involve the numbers 4319-61 and 4368-96, 4400-42, and 4550. Along with the changes in the numbers have been included certain changes (or rather restorations) in spelling, and the omissions of a few variant spellings. The changes made should be inserted at the appropriate places in the Index of languages (4.20ff.).

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